In the Claims:

1. (currently amended) A method for determining a ~~the~~ mass moment of inertia of an electric motor drive system of a machine, comprising a drive motor and further drive elements arranged downstream of said drive motor, the method comprising:

a) determining a compensation current, which compensates losses occurring at a constant motor speed of said motor, so that said ~~a~~ motor speed of said drive motor remains constant;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; ~~and~~

c) calculating a torque constant of said drive motor; and

d)~~c)~~ calculating said ~~a~~ mass moment of inertia of said electric motor drive system based on said calculated torque constant and said determined acceleration current.

2. (currently amended) The method in accordance with claim 1, wherein said determining said compensation current comprises determining current required for driving said drive motor at said constant motor speed at at least one motor speed.

3. (original) The method in accordance with claim 2, wherein said at least one motor speed comprises at least two different motor speeds.

4. (currently amended) The method in accordance with claim 2, wherein said at least one motor speed remains constant during a presettable length of time.

5. (currently amended) A method for determining a mass moment of inertia of an electric motor drive system of a machine, comprising a drive motor and further drive elements arranged downstream of said drive motor, the method comprising:

a) determining a compensation current, which compensates losses occurring at a constant motor speed of said motor, so that said motor speed of said drive motor remains constant, wherein said determining said compensation current comprises determining current required for driving said drive motor at said constant motor speed at at least two different motor speeds;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; and

c) calculating said mass moment of inertia of said electric motor drive system based on said determined acceleration current; and

~~The method in accordance with claim 2,~~ wherein ~~to of~~ said at least two motor speeds ~~one motor speed~~ have the same value, but opposite signs.

6. (original) The method in accordance with claim 5, wherein said determining said compensation current comprises sequentially operating said drive motor at four different speeds, of which respectively two have the same value, but opposite signs.

7. (original) The method in accordance with claim 1, further comprising controlling a number of revolutions of said drive motor.

8. (original) The method in accordance with claim 7, wherein said determined compensation current is formed by the use of a feedforward current of a revolution speed controller.

9. (original) The method in accordance with claim 1, wherein said determining said acceleration current comprises operating said drive motor at two different accelerations.

10. (original) The method in accordance with claim 9, wherein said two accelerations have different signs.

11. (original) The method in accordance with claim 9, wherein each of said two accelerations remains constant for a presettable length of time.

12. (original) The method in accordance with claim 10, wherein each of said two accelerations remains constant for a presettable length of time.

13. (original) The method in accordance with claim 1, wherein said determining said acceleration comprises forming a difference between a total torque current of said drive motor and said determined compensation current.

14. (currently amended) A method for determining a mass moment of inertia of an electric motor drive system of a machine, comprising a drive motor and further drive elements

arranged downstream of said drive motor, the method comprising:

a) determining a compensation current, which compensates losses occurring at a constant motor speed of said motor, so that said motor speed of said drive motor remains constant;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; and

c) calculating said mass moment of inertia of said electric motor drive system based on said determined acceleration current ~~The method in accordance with claim 1~~, wherein said calculating comprises equating two formulations of said defined ~~an~~ acceleration of said drive motor.

15. (currently amended) The method in accordance with claim 14, wherein said two formulations comprise ~~comprises~~ representing said acceleration, on the one hand, as a function of said determined acceleration current, and on the other hand as a function of said mass moment of inertia.

16. (original) The method in accordance with claim 1, wherein said calculating of said mass moment of inertia comprises determining a mass moment of inertia of a load of said drive system from a difference between a total mass moment of inertia of said drive system and a mass moment of inertia of said drive motor.

17. (currently amended) A method for determining a mass moment of inertia of an electric motor drive system of a machine, comprising a drive motor and further drive elements arranged downstream of said drive motor, the method comprising:

a) determining a compensation current, which compensates losses occurring at a constant motor speed of said motor, so that said motor speed of said drive motor remains constant;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; and

c) calculating said mass moment of inertia of said electric motor drive system based on said determined acceleration current, wherein said calculating comprises:

determining a mass moment of inertia of a load of said drive system from a difference between a total mass moment of inertia of said drive system and a mass moment of inertia of said drive motor; and

~~The method in accordance with claim 16, wherein said calculating further comprises~~ calculating a ratio of said mass moment of inertia of said drive motor to said mass moment of inertia of said load.

18. (original) The method in accordance with claim 17, further comprising displaying said ratio.

19. (original) The method in accordance with claim 18, wherein said displaying is a visual display.

20. (original) The method in accordance with claim 18, wherein said displaying is an audio display.

21. (new) The method in accordance with claim 3, wherein said at least two motor speeds have the same value, but opposite signs.

22. (new) The method in accordance with claim 21, wherein said determining said compensation current comprises sequentially operating said drive motor at four different speeds, of which respectively two have the same value, but opposite signs.

23. (new) The method in accordance with claim 1, wherein said calculating comprises equating two formulations of an acceleration of said drive motor.

24. (new) The method in accordance with claim 23, wherein said two formulations comprise representing said acceleration, on the one hand, as a function of said determined acceleration current, and on the other hand as a function of said mass moment of inertia.

25. (new) The method in accordance with claim 16, wherein said calculating further comprises calculating a ratio of said mass moment of inertia of said drive motor to said mass moment of inertia of said load.

26. (new) The method in accordance with claim 25, further comprising displaying said ratio.

27. (new) The method in accordance with claim 26, wherein said displaying is a visual display.

28. (new) The method in accordance with claim 26, wherein said displaying is an audio display.

29. (new) A method for determining a control parameter of an electric motor drive system of a machine, comprising a drive motor and further drive elements arranged downstream of said drive motor, the method comprising:

determining a mass moment of inertia of said electric motor drive system by:

a) determining a compensation current, which compensates losses occurring at a constant motor speed of said motor, so that said motor speed of said drive motor remains constant;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; and

c) calculating said mass moment of inertia of said electric motor drive system based on said determined acceleration current; and

determining said control parameter of said electric motor drive system by performing a

calculation based on said mass moment of inertia of said electric motor drive system and a mass moment of inertia of said drive motor.

30. (new) The method in accordance with claim 29, wherein said calculating said mass moment of inertia of said electric motor drive system comprises determining a mass moment of inertia of a load of said drive system from a difference between a total mass moment of inertia of said drive system and a mass moment of inertia of said drive motor, wherein said control parameter of said electric motor drive system is determined by a calculation based on said mass moment of inertia of a load of said electric motor drive system and said mass moment of inertia of said drive motor.

31. (new) The method in accordance with claim 30, wherein said control parameter of said electric motor drive system is determined by calculating a ratio of said mass moment of inertia of said drive motor to said mass moment of inertia of said load.

32. (new) The method in accordance with claim 31, further comprising displaying said ratio.

33. (new) The method in accordance with claim 32, wherein said displaying is a visual display.

34. (new) The method in accordance with claim 32, wherein said displaying is an audio display.